

Internal distribution code:

- (A) Publication in OJ
(B) To Chairmen and Members
(C) To Chairmen
(D) No distribution

D E C I S I O N
of 31 May 2005

Case Number: T 0675/02 - 3.4.2

Application Number: 91114458.2

Publication Number: 0477569

IPC: G03G 15/00

Language of the proceedings: EN

Title of invention:
Electronic printing system for printing signatures

Patentee:
XEROX CORPORATION

Opponent:
Océ-Technologies B.V.

Headword:
-

Relevant legal provisions:
EPC Art. 56

Keyword:
"Inventive step (main and first auxiliary requests: no; second auxiliary request: yes)"

Decisions cited:
-

Catchword:
-



Case Number: T 0675/02 - 3.4.2

D E C I S I O N
of the Technical Board of Appeal 3.4.2
of 31 May 2005

Appellant: Océ-Technologies B.V.
(Opponent) St. Urbanusweg 43
NL-5914 CC Venlo (NL)

Representative: van Meeteren, Arend Anthonie
Océ-Technologies B.V.
Patents & Information
St. Urbanusweg 43
P.O. Box 101
NL-5900 MA Venlo (NL)

Respondent: XEROX CORPORATION
(Proprietor of the patent) Xerox Square - 020
Rochester, NY 14644 (US)

Representative: Grünecker, Kinkeldey,
Stockmair & Schwanhäusser
Anwaltssozietät
Maximilianstrasse 58
D-80538 München (DE)

Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 25 April 2002
rejecting the opposition filed against European
patent No. 0477569 pursuant to Article 102(2)
EPC.

Composition of the Board:

Chairman: A. G. Klein
Members: F. J. Narganes-Quijano
C. Rennie-Smith

Summary of Facts and Submissions

- I. The appellant (opponent) has lodged an appeal against the decision of the opposition division rejecting the opposition against European patent No. 0 477 569 (based on European patent application No. 91 114 458.2).
- II. The opposition filed by the appellant against the patent as a whole was based on the grounds of lack of inventive step (Article 100(a) EPC together with Articles 52(1) and 56 EPC).

In the decision under appeal the opposition division referred to documents

O1: "The lithographers manual" by C. Shapiro, The Graphic Arts Technical Foundation Inc., USA, 1966; pages 9:25 to 9:31,

O2: GB-B-2128843 and

O3: US-A-4891681,

and held that the closest state of the art was represented by the disclosure of document O2 and that the subject-matter of claim 1 as granted involved an inventive step (Article 56 EPC) over the cited prior art.

- III. Oral proceedings were held before the Board on 31 May 2005 in the presence of the parties.

The appellant requested that the decision under appeal be set aside and the patent be revoked in its entirety.

The respondent (patent proprietor) requested that the appeal be dismissed and the patent be maintained as granted as a main request, or maintained in amended form on the basis of claims 1 to 10 as amended according to a first or a third auxiliary request submitted with its letter dated 29 April 2005 or according to a second auxiliary request filed during the oral proceedings, together with the description and the drawings of the patent as granted.

At the end of the oral proceedings the Board gave its decision.

IV. Claim 1 according to the main request reads as follows:

"A process for printing sets (173) of signatures prints (170) in an electronic printing system (2) which produces prints of image pages from electronic pages composed of image signals, said system having a source of print media sheets (108) for said signature prints and programming means including a display screen (62) for programming the system to produce said sets of signature prints (170), comprising the steps of:

a) electronically displaying print programming selections (150, 152) including signature print programming selections on said screen;

b) programming signature print instructions by actuating selected ones of said signature print programming selections;

c) providing electronic pages for printing said signatures;

d) ordering said electronic pages to print at least two of said image pages (172) in an ordered side

by side relation on at least one side of said print media sheets (108) with said side by side image pages on each signature print (170) separated from one another along a signature foldline (149);

e) adjusting a distance by which the image pages on some of said signature prints are separated from one another to avoid obscuring of part of the image pages on folding of said signature prints along said signature foldline when forming said set;

f) printing said ordered image pages (172) on said print media sheets (108) to provide said set of signature prints (170);

characterized by

e') in said adjusting step, adding a preset incremental distance (X) to the second signature (170-2) in said set of signature prints (170); said distance (X) being programmed with a user interface having a display for showing a relative magnitude of said distance to the second signature;

g) applying said incremental distance (X) to the second signature in said set (173);

h) for each succeeding signature in said set, calculating a shift increment in accordance with the following expression:

$$\text{Shift Increment} = X (\text{Signature}(i) - 1)$$

where $\text{Signature}(i)$ refers to the position of the signature within the signature set, with $\text{Signature}(1)$ [element 170-1] = 1 corresponding with the first signature of the signature set, $\text{Signature}(2)$ [170-2] = 2 corresponding with the second signature of the signature set, ... $\text{Signature}(N)$ [170-N] = N

corresponding with the last signature of the Nth signature set;

i) applying each of said shift increments calculated in step (h) to the signature with which it corresponds."

Claim 1 amended according to the first auxiliary request differs from claim 1 of the main request in that step "i)" is followed by the following additional step:

"n) scaling said images pages (172) to provide a uniformly sized and centered image (176) on each of the signature pages in said set (173) of signature prints (170)."

Claim 1 amended according to the second auxiliary request differs from claim 1 of the main request in that step "i)" is followed by the following passage:

"further including the steps of

providing plural signature segments (174) including a number of said signature prints (170) for assembly with one another to form said set (173) of signature prints (170); and

further adjusting the position of predetermined ones of said electronic pages on said print media sheets in accordance with the location of individual ones of said signature segments (174) when assembled together."

The second auxiliary request further includes dependent claims 2 to 10 all referring back to claim 1.

The wording of the claims amended according to the third auxiliary request is not relevant to the present decision.

- V. The arguments of the appellant in support of its request were substantially the following:

Document O2 pertains to booklet printing and teaches compensating the push-out effect resulting from folding the print sheet by changing the printing position of the pages on the sheet (page 3, lines 8 ff.). Although in document O2 only one single signature print sheet is used, the sheet is also folded and cut and the same push-out effect takes place as is considered in the invention. Therefore, the document addresses the same problem considered in the patent (page 3, lines 11 to 20).

The push-out effect is compensated in document O2 by applying an image shift increment to the print pages and although the document fails to disclose any information on the magnitude of the increments, the skilled person would find out inevitably, by simple experimentation or by calculation, that the shift increment is linear, i.e. that the same shift increment must be applied from one signature print to the next one. This result is in fact well known as illustrated in documents O1 and O3. Although document O3 pertains to a different printing and cutting method, the document shows, following analytical considerations, that the required shift increment is linear and is a function of the thickness of the paper. Document O1 proposes shifting the print position only every three or four signature prints, but the shifting is also

linear and the fact that the shifting is applied to every three or four signatures only reflects the difficulties at that time in shifting the position of the print pages by a small amount. Since the compensation shift required to correct the push-out of signatures is linear, it is obvious that any programming operation requires inputting the incremental shift value only once.

The display of printing programming selections on a screen is also obvious in view of the common use of graphic interfaces at the priority date of the patent and the teaching of document O2 which gives in 1982 an operator the possibility to select the steps of the printing process and to enter the positions of single page units on the printing sheets (page 8, lines 5 ff.). In addition, document O2 also requires a CPU, an input device in the form of a keyboard (page 8, lines 5 to 7 and page 5, line 23) and a digitizer (page 8, lines 7 to 20). The further implementation in the form of a mouse or the like to make selections in the screen and the display of the designated distances on the screen was also obvious at the priority date of the patent. Document O2 already reaches a great improvement by automating the impositioning of pages on the basis of a complete signature layout pre-stored in a memory (page 7, line 19 to page 8, line 13) and further automation by computer implementation was a clear trend at the priority date of the patent. Therefore, it was obvious to automate the approaches taught in the prior art so as to arrive at the invention.

Thus, the essential information on the push-out effect and on how to compensate for the effect was already

taught in document O1 as early as 1966, and the invention only provides a computer-implemented automation of the process of document O1 on the basis of the automation capabilities available at the priority date of the patent.

The additional features of claim 1 according to each of the auxiliary requests are trivial. It was obvious in particular to rescale the pages to avoid cutting-out of the print pages. It was also obvious to apply the same solution used for the compensation of the push-out effect of signatures upon folding to the problem of obscuring of image pages when several segments are assembled together.

VI. The arguments of the respondent in support of its requests can be summarized as follows:

The closest prior art is represented by document O2 which is however directed to a different problem (page 3, lines 8 to 20) and fails to disclose features a) and b) and the features of the characterizing portion of claim 1 according to each of the requests. In particular, there is no unambiguous disclosure in document O2 of printing programming selections being displayed on the screen. Document O2 refers to the designation of parameters (page 3, line 16 to page 4, line 7, and page 8, lines 5 to 7), but neither discloses any mathematical correlation between the parameters nor teaches how to select these parameters. Rather, the values of the parameters are empirically determined and adjusted manually by trial and error. The claimed invention, however, requires the designation of one single parameter that determines the

whole process. Thus, the distinguishing features of the invention result in a simplification of the complex positioning operation of the page images on the signatures according to the process of document O2.

Document O1 only teaches compensation for every three or four signatures (page 9:28, right column), i.e. proposes a stepped and not a linear function and fails to teach the linear shift according to the invention.

Document O3 teaches first cutting the signatures before printing and therefore follows a completely different approach.

Thus, the claimed invention requires displaying very specific instructions and inputting only one parameter. These features are not rendered obvious by the prior art; nor does the mere automation of the prior art render the claimed invention obvious.

The additional feature of claim 1 according to the first auxiliary request relating to the scaling of the image pages avoids the problems arising when the shift is so big that the pages reach the signature margins.

The additional features of claim 1 according to the second auxiliary request take into consideration the provision of a plurality of segments to form a book.

Reasons for the Decision

1. The appeal is admissible.

2. *Main request*

2.1 Closest prior art

The invention is directed to the impositioning of print pages on a plurality of signature print sheets that are then stacked together, folded along the centreline and trimmed to form a segment, a plurality of segments being then assembled to form a book or the like (page 2, lines 3 to 9 and page 5, lines 4 to 9 together with Figures 8, 9 and 19 and the corresponding description), and the primary problem addressed in the patent is the push-out of signature sheets caused by the thickness of the sheets when a plurality of signature sheets are folded and the subsequent shift of the visual centre of the printed pages on the different signature sheets (Figure 19 and the corresponding description).

Document 02 addresses a similar problem in a print page impositioning procedure in which a plurality of pages are printed on a signature sheet and then the signature sheet is folded along a plurality of foldlines, bound and cut to form a segment (page 2, lines 4 to 14 together with Figures 1 and 2 and the corresponding description). However, although the thickness of the signature sheet also causes shifts in the visual centre of the print pages when the signature sheet is successively folded and these shifts require an appropriate compensation (page 3, lines 8 to 20), the segment is formed from one single signature sheet

(page 2, lines 28 and 29, and claim 1) and there is properly no push-out of signature sheets as in the print page impositioning procedure followed in the patent. As a matter of fact, and as put forward by the respondent with reference to the passage on page 3, lines 16 to 20 of document O2, the position of the print pages is corrected in the document "according to the number of assembled page units [in the signature] or method of binding".

In view of the above, the Board considers that, notwithstanding the similar problems considered in the patent and in document O2 and in spite of the number of features in common between the disclosure of document O2 and the claimed invention, the closest state of the art is not represented by document O2 as considered by the parties but rather by document O1. This document discloses the manual impositioning of print pages on paper sheets so as to meet predetermined requirements (introductory paragraph on page 9:25) and discloses in particular a process for printing sets of signature prints each being constituted by a print sheet having printed thereon image pages in an ordered side by side relation with the side by side image pages on each signature sheet being separated from one another along a signature foldline to avoid obscuring part of the image pages on folding of the signature sheets along the signature foldline, the signature sheets being then stacked on each other, folded and cut to form a saddle-stitched segment. In addition, the document addresses the problem of the saddle stitch push-out of signature sheets caused by the thickness of the sheets upon folding and which leads after cutting to a varying distance between the print pages and the respective

margins of the signature sheet in the successive signature sheets (page 9:28, Figure together with the paragraphs bridging the first and second columns).

Thus, unlike document O2, document O1 discloses the same page impositioning technique considered in the patent and in addition addresses the same primary problem considered in the patent and relating to the shifts of the visual centre of the print pages caused by the push-out of signature sheets upon folding. For these reasons document O1 constitutes the appropriate starting point for the assessment of inventive step of the claimed invention.

2.2 Distinguishing features - Objective problem

According to document O1, the problem of the loss of the visual centre of the pages caused by the push-out of signatures upon folding is solved by reducing the bind-margin gutter, i.e. the distance between adjacent print pages on a signature sheet, and adding this compensating distance amount as an incremental distance to the outside-margin gutter of every three or four signatures in the stack (page 9:28, second column, first paragraph).

The subject-matter of claim 1 of the main request differs from the manual process of document O1

- in all the claimed features relating to the use of an electronic printing system and to the automation of the process including the use of programming and display means, and

- in that only the push-out compensating distance amount for the second signature is programmed and the amount is then incrementally applied linearly to every subsequent signature.

The technical effect achieved by the distinguishing features identified above is the automated and improved compensation of the effect of the push-out of signatures on the layout of print pages in the successive signature prints (page 2, lines 8 to 12 and 41 of the patent specification).

Consequently, the problem solved by the claimed subject-matter over the disclosure of document O1 can be seen in the automation of the manual process and in the improved impositioning of print pages.

2.3 Inventive step

No inventive step can be seen in the formulation of the problem itself since in technology and in particular in the printing field the automation of cumbersome manual processes as that disclosed in document O1 published in 1966 was a general trend and an obvious concern long before the priority date of the patent in suit (1990). This trend already existed in the specific field of positioning and printing of signatures for books in the early eighties as evidenced by the disclosure of document O2 having a priority date of 1982 and showing the automation of the process of producing booklets following an impositioning technique close to that of document O1.

Thus, the formulation of the problem was obvious and since automation constitutes a general trend also in this field, it was also obvious at the priority date of the patent in suit to apply conventional automation techniques known at that time to the automation of the manual process disclosed in document O1. The automated process disclosed in document O2 already shows the application of automation techniques known in the early eighties to a similar print page impositioning procedure (see claim 1) and involving, among others,

- the use of an electronic printing system (Figure 3 and the corresponding description) for forming the signature print (Figures 1 and 2) by printing the image pages on a print media sheet according to electronic pages composed of image signals (page 7, lines 2 to 4 and claim 6),
- the use of programming means including signature print programming selections (page 5, lines 20 to 26 and claim 2), and
- the use of a display screen for enabling the operator to program and to control the electronic printing system (page 6, lines 8 to 17) and the use of a user interface for programming compensation adjustments to the distances between print pages (page 3, lines 8 to 20 together with page 7, line 27 to page 8, line 13 and claims 2 and 9).

In addition to the automation techniques shown in document O2, other automation techniques became standard in the general field of automation between

1982 and the priority date of the patent. In particular, it has been undisputed by the respondent that the use of a display screen for displaying programming selections to be actuated for programming purposes - in particular by means of a "mouse" or a touch-screen monitor - although not disclosed in document O2 also became a standard programming measure before the priority date of the patent in suit.

In view of the above, the Board is of the opinion that the application of automation techniques such as those disclosed in document O2 and the use of programming selections electronically displayed on a screen to the automation of the manual printing and impositioning procedure disclosed in document D1 was obvious at the priority date of the patent. The application of these techniques to the process of document O2 reproduces in addition all the claimed features relating to the use of an electronic printing system and to the automation of the process including the use of programming and display means, the display of the relative magnitude of input or programmable parameters being also a very common procedure in the art.

In addition, the teaching of document O1 relating to the application of a constant push-out compensating amount to every three or four signature prints shows that the compensating amount is, although stepped, linear in the series of signature prints within a segment. Furthermore, the skilled person would immediately understand that only practical reasons such as the difficulties in manually shifting the position of a print page by an amount of the order of the thickness of the print signature justifies applying in

document 01 the compensating amount to only every three or four signature prints, and that, in an automated electronic printing system as that resulting from the automation of the manual process of document 01, there would be no reason for restricting the application of the compensating amount to a predetermined number of signature prints. On the contrary, the skilled person would, by the very nature of the signature push-out effect, recognise that the problem affects not only every three of four signatures but inherently every successive signature as shown for instance in document 03 (Figures 3 to 5 together with the corresponding description). Thus, the skilled person confronted with the problem formulated above would readily recognise in the course of the automation of the process that the resulting automated process should allow for the application of a compensating amount to every signature print and that this approach would improve the impositioning of the print pages on the signature prints of the segment. In addition, since the compensating amount is linear, the skilled person would have considered it superfluous to enter the value of the compensating amounts for each of the signature prints into the programmable automated electronic printing system and would have recognised immediately that it would be enough to enter just once into the system the value of the compensating amount from one signature print to the next in such a way that the system would then automatically apply incrementally the compensating amount to each of the successive signature prints.

Thus, without overcoming any special technical difficulty, and just by applying what in the Board's

opinion constituted at the priority date of the patent in suit conventional and obvious automation steps and by taking into account the straightforward capabilities of the resulting programmable automated process, the skilled person confronted with the problem formulated above would have arrived directly and without exercise of inventive activity at the claimed subject-matter.

In view of the above, the Board cannot see an inventive step in the subject-matter of claim 1 as granted (Articles 52(1) and 56 EPC).

3. *First auxiliary request - Inventive step*

Claim 1 of the first auxiliary request differs from claim 1 as granted only in the features specified in dependent claim 10 as granted according to which the image pages are scaled to provide a uniformly sized and centred image on each signature page of the signature prints.

However, as pointed out by the appellant, at the priority date of the patent it was very common in the field of automatic printing to magnify or to reduce the size of print images according to predetermined requirements and, in particular, to rescale the print images when the layout of the print images on the corresponding print support exceeded the specifications of the required printing job.

Consequently, no inventive step can be seen in the additional feature of the subject-matter of claim 1 amended according to the first auxiliary request (Articles 52(1) and 56 EPC).

4. *Second auxiliary request*

4.1 Amendments

Claim 1 of the second auxiliary request differs from claim 1 as granted in the additional features defined in dependent claim 7 as granted. These features are supported by the passage on page 7, lines 25 to 37 of the description of the patent specification (Article 84 EPC) and based on the corresponding passage on page 7, line 54 to page 8, line 9 of the of the publication of the application as originally filed (Article 123(2) EPC).

Dependent claims 2 to 10 result from dependent claims 2 to 6 and 8 to 11 as granted after appropriate renumbering of the claims and of the dependence thereof.

The Board is therefore satisfied that the amendments to the patent according to the second auxiliary request satisfy the formal requirements of the EPC.

4.2 Inventive step

The additional features of the amended claim 1 relating to the provision of plural signature segments for assembly with one another are already anticipated by document 01 (see point 2.1 above). However, document 01 is silent as to the further adjustment of the position of the pages in accordance with the location of the signature segments in the resulting set of segments, i.e. in the resulting book.

According to the patent specification, the further distinguishing feature identified above prevents parts of the print images on the pages within the additional segments constituting the book from being obscured by the binding and allows the book to open easily (page 7, lines 25 to 29).

None of the documents considered during the appeal proceedings mentions this problem. As a matter of fact, each of documents O1 to O3 only addresses the positioning of the page images on the signature prints within a single segment and all three documents are silent as to any potential effect on the visual centre of the page images of the position of the signature segment relative to other signature segments of the assembly of segments constituting the book-like final product. In addition, there is no hint in the documents towards varying the position of the image pages in the different segments of the book.

The appellant has submitted that the solution to the problem formulated above corresponds to the same solution applied in the invention to solve the problem of the obscuring effect resulting from the push-out of individual signature prints upon folding of the prints and that for this reason the proposed solution is obvious. However, while the signature push-out problem arises from the folding of signature prints having a non-negligible thickness, the problem mentioned above arises, not from the folded signatures themselves, but from the layout arrangement of the plurality of segments of signatures and consequently, although both problems are ultimately directed to avoiding obscuring of page images, the nature of the two problems is

different. Thus, although the two problems are solved in the patent following an analogous approach, the problems are nonetheless different and, in the absence of any appropriate disclosure or hint in the prior art, the obviousness of the solution to one of the problems does not necessarily render obvious the solution to the other.

For these reasons, and in the absence of evidence showing that the problem and the proposed solution were known or at least suggested before the priority date of the patent in suit, the Board concludes that the subject-matter of claim 1 amended according to the second auxiliary request involves an inventive step within the meaning of Article 56 EPC with regard to the prior art considered during the appeal proceedings. The same conclusion above applies to claims 2 to 10 by virtue of the dependence of these claims on claim 1.

5. The Board is therefore satisfied that the patent as amended according to the second auxiliary request and the invention to which it relates meet the requirements of the EPC. Accordingly, the contested decision is to be set aside and the patent maintained in amended form on the basis of the patent documents according to the second auxiliary request of the respondent (Article 102(3) EPC).

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the first instance with the order to maintain the patent on the basis of the following documents:
 - claims 1 to 10 of the second auxiliary request filed during the oral proceedings, and
 - the description and drawings as granted.

The Registrar:

The Chairman:

E. Görgmaier

A. G. Klein